

1 POWER SUPPLY TASK FORCE MEETING

2 PUBLIC HEARING

3

4

5 Wednesday, May 28, 2008

6 Columbia City Council Chambers

7 701 East Broadway

8 Columbia, Missouri

9

10 BEFORE: John Conway, Chair

11 Tom Baumgardner, Member

12 Ernie Gaeth, Member

13 Dick Malon, Member

14 Tom O'Conner, Member

15 Hank Ottinger, Member

16 Dick Parker, Member

17 Bob Roper, Member

18 Dave Wollersheim, Member

19

20

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1 CHAIR CONWAY: I'd like to bring the
2 public meeting to order and welcome everyone to our
3 second public meeting and welcome to Powering Our
4 Future. Public meeting is being held to review the
5 interim version of Columbia's Integrated Resource
6 Plan. An Integrated Resource Plan, or commonly
7 referred to as an IRP, is a great way of studying our
8 future power supply options.

9 IRP takes into consideration how the
10 energy is created, how the energy is transported, the
11 environmental impact and the benefits of the energy
12 efficiency. The goal of the IRP is to give us
13 information we need to secure reliable, cost-effective
14 and environmentally sensitive power for the future.

15 There are two main components to the
16 study, the supply side and the demand side. The
17 engineering firm of Burns and McDonnell has taken
18 recommendations from the task force and the public and
19 they have some initial results to share with us
20 tonight. We wanted to review these findings with you
21 at this time before the final IRP is completed.

22 After the presentation, there will be an
23 opportunity to ask questions. I would ask everyone
24 to -- that wants to ask a question, to secure a card,
25 write your question on it and then we'll collect the

1 cards at the end of the presentation.

2 At this time, I'd like to introduce Kiah
3 Harris from Burns McDonnell in Kansas City. And Kiah
4 will review the initial data that has been gathered
5 and put together for the IRP. Kiah.

6 MR. HARRIS: Thank you, John. Well, I
7 appreciate the opportunity to be here again and talk
8 about this interim step and phase in this Integrated
9 Resource Planning process.

10 What I want to do tonight is to go

11 through several issues. One is to kind of recap and
12 give a little bit overview of what an IRP is and how
13 it's performed and then some of the initial results
14 that we have looked at and some of the conclusions and
15 things that we've got on an interim basis to talk to
16 the task force about.

17 Just to kind of give you a quick recap,
18 again, an Integrated Resource Plan is the balancing of
19 producing the electricity, the cost of producing the
20 electricity versus the cost of producing the
21 electricity. So we're looking at the savings of
22 electricity through demand-side programs and the cost
23 of producing it through supply-side options.

24 And this slide was reviewed at the
25 earlier public meeting and I thought it would be

1 helpful to kind of just get everybody focused again on
2 where we are in the process. Tonight we're at this
3 supply-side and demand-side discussion where we're
4 looking at these two paths as individual pieces before
5 we get into the integration of the -- of the supply-
6 and demand-side options.

7 In this first task phase that we looked
8 at, we collected and reviewed data from the City to
9 kind of get an idea where everything currently stood.
10 We then identified and analyzed several supply- and
11 demand-side options on an individual basis and looked
12 at the types of things that were coming out as
13 optionally good -- good things to consider in the --
14 in the overall process.

15 And then the last step is to take these
16 individual options on supply and demand side and bring
17 them together to produce a final plan that includes
18 both the recommended supply and recommended
19 demand-side programs to move forward with.

20 Just to give you a little recap on where
21 the City stands right now, this graph also was shown
22 at the first meeting. The dotted black line indicates
23 the -- the -- the demand -- peak demand that is set by
24 the -- the City customers. The dark line represents
25 the amount of capacity that the utility has to keep on

1 hand to satisfy regulatory obligations. And so
2 that's -- the black line is the line that we have to
3 target a resource capacity plan for.

4 And then all the colored areas underneath
5 that represent the types of resources and the
6 megawatts available from a variety of capacity options
7 that the City has.

8 This indicates that there will be some
9 retirements down at the power plant on the Business
10 Loop. And the white space in between these areas
11 represents the capacity deficit that would have to be
12 satisfied by the Integrated Resource Plan.

13 Commensurate with the capacity issue is
14 the status of energy. And energy is a little bit more
15 difficult to show over time, but what this curve does
16 again is represents the rank ordering of each hour's
17 demand over a year's period that is set by the City.
18 So this sets your -- your peak time all the way over
19 to the lowest demand that you have on the City on --
20 on an hourly basis. And this just rank orders all
21 those across the 8,760 hours of the year.

22 And the area underneath this curve
23 represents all the energy that is consumed by the --
24 the citizens of Columbia. And we've represented the
25 major blocks of energy sources that are on this curve

1 by these areas. This is for the 2015 forecast period,
2 so this green area represents where the energy would
3 come from your existing coal resources. This blue
4 area in here is from natural gas options. And then
5 these -- these portions up in here (indicating) are
6 either from the market or other peaking resources.

7 So essentially what you're seeing on this
8 graph is that you've pretty much fully utilized all of
9 the coal-type energy that you have on the system and
10 all the incremental will be coming primarily from
11 gas -- natural gas-fired facilities or the market.

12 And so given this picture, this is where
13 we really started looking at options that may make
14 sense for the -- for the City.

15 So when we look at supply side options,
16 what we're doing in this analysis is to look at these
17 individual units that might make sense for the City.
18 And certainly we have to look at the capacity amounts
19 that each of these resources might bring in and how
20 that might fit into the deficit curve on the -- on the
21 City's system.

22 So we looked at a variety of resources.
23 And these resources are taken and essentially put into
24 a computer process and what this computer does then is
25 to provide the -- the technology type, whether it be a

1 biomass power plant or a combustion turbine or an
2 engine generator set. It tells us how many megawatts
3 are optimal for the City to install from that device
4 as well as what year that device needs to be
5 installed.

6 So on the supply side what we're looking
7 at doing is -- is having these portfolios identified
8 that give us the technology, the megawatts and the
9 year of installation.

10 The resources that we looked at on the
11 supply side included several different capacity sizes
12 of a regional coal unit much like your participation
13 in the Prairie States plants. And we looked at sizes
14 of 25 megawatts 50 megawatts and 100 megawatts.
15 You're pretty much able to select the size level that
16 you want to take out of that type of a resource.

17 We also looked at numerous local options
18 here from -- ranging from what's called a fluidized
19 bed unit. This unit is capable of burning biomass,
20 corn stover and that type of thing. And that would be
21 installed out at the power plant on the Loop. And
22 these are the two sizes of that system that we looked
23 at (indicating).

24 We looked at a local integrated
25 gasification combined cycle unit, which is a unit that

1 locally gasifies coal and puts it into a combined
2 cycle power plant and fires it on the synthetic gas.
3 We looked at just straight natural gas-fired
4 combustion turbines locally, engine generator sets
5 that are about 8 megawatts a piece.

6 We looked at local solar photovoltaic
7 panels that would be installed on commercial
8 buildings. We looked at acquiring more wind from
9 regional wind resources, much like you're pulling in
10 today from your contract with Associated Electric.

11 We looked at an area-pumped hydro plant,
12 we looked at more purchases from the market and we
13 looked at small units that are called combined heat
14 and power facilities that would be installed at a
15 local commercial building here in Columbia.

16 Now, some of the things that we didn't
17 look at and -- were nuclear. One of the reasons for
18 not really considering the nuclear is -- is the lack
19 of a real identified project that we had that gave us
20 an in-service date as well as the cost of -- of that
21 option to look at.

22 We looked at kind of wind in Columbia,
23 but it seemed to be a little impractical with the size
24 of the facilities that would be needed from a
25 commercial standpoint. Commercially utility grade

1 turbines are typically installed on towers that are
2 approaching 300-feet high right now with massive
3 propellers and the -- the residential-type facilities
4 are put on primarily 100-foot towers that are sited in
5 the residential situation and we felt that the option
6 of looking at regional purchases was better than those
7 two. So we've considered those to be a bit
8 impractical for this go-around of the study.

9 Solar options, there's two other solar
10 types of power plants that are being looked at.
11 They're both using solar concentrating facilities.
12 The solar concentrating sterling engine type plants
13 that are being put out in California right now are
14 really in kind of a proof-of-concept stage and they're
15 really not a commercial product to the point where we
16 could incorporate the performance and cost structure
17 of those type units here.

18 And the solar concentrating thermal
19 plants that are being installed, one just went
20 commercial in Nevada right now. The cost of that
21 energy out of that plant right now is targeted to be
22 \$170 a megawatt hour, which for the options that you
23 have available to us or -- or to you all is much more
24 expensive than those options, so it wasn't considered
25 commercially practical.

1 There are also small micro hydro
2 facilities that could have been considered. The
3 difficulty in us evaluating those is that they're very
4 site specific and that -- that site determines how --
5 what the performance, the energy output, the cost is
6 going to be. And so without a specific thing to
7 evaluate, we didn't really have one included in the
8 analysis.

9 Now, that's not to say that if one of
10 those sites was presented to the City, that it
11 wouldn't be beneficial, but we just didn't have a site
12 to -- to really cost out and do the performance on
13 like we could these other options.

14 Some other considerations in this study,
15 we looked at three levels of carbon tax. You, I'm
16 sure, heard in the campaigns today that there's
17 discussion going on about carbon regulation right now.
18 And we looked at a base number without any carbon tax
19 applied just to see what the base cost of the options
20 would look like. We looked at a \$10 number and a \$30
21 number. And we'll talk a bit about some results based
22 on those -- that range.

23 We also looked at the transmission import
24 capabilities of the City. And we found that although
25 there's an investment needed for upgrades in certain

1 areas on the transmission system, it's reasonable to
2 expect that you have import capability of -- of the
3 amount needed to really satisfy your future
4 obligations.

5 And we also looked at maintaining the
6 reserve margin of 15 percent that is established by
7 regulations for -- for the utility.

8 So one of the options portfolios that
9 was -- that came out of the model as -- as low cost
10 was use of engines at the local Loop power plant to
11 add roughly about a 50 megawatt portion of a unit that
12 you would participate in, like the Prairie States
13 power plant, and then to buy other capacity off of the
14 market.

15 Another portfolio that we assessed was to
16 essentially keep these engines at the local plant but
17 to replace all the -- the coal that was in that
18 previous option with wind energy. And this wind
19 energy would be purchased essentially like you're
20 purchasing the contract from Associated Electric.

21 One of the issues with wind that we had
22 to consider is -- this is a chart of a wind turbine
23 output in July in -- in west Texas. And you can see
24 the -- the variability of the output of the wind over
25 the hours in this -- these four days right here. And

1 this variability has to be compared to what you could
2 dispatch with a more traditional supply-side option
3 like a combustion turbine.

4 And when we talk about capacity, the
5 difficulty with wind is that you can't accredit it or
6 you can't claim the capacity at 100 percent of the
7 nameplate on the wind. So what we're dealing with in
8 this region is roughly about a 10-- 15 to 20 percent
9 value of the nameplate in megawatts.

10 So in this assessment here, we would get
11 somewhere around 15 to 20 megawatts of the credited
12 capacity for the wind turbine, which means we have to
13 add roughly 80 to 85 megawatts of either market
14 purchases or another type of resource to back this up;
15 whereas, with the combustion turbine, we could claim
16 100 megawatts of that nameplate on that piece. So we

17 included these concepts into the study and -- and
18 incorporated the cost of that -- that backup.

19 Another option that we looked at was to
20 again keep the engines down there, but also look at
21 this local biomass plant. And the size that came out
22 favorable was about a 73 megawatt unit that was
23 identified in an earlier study that the City had done
24 specifically for the -- for the power plant.

25 And this option would keep a lot of the

1 existing steam facilities in service down at the -- at
2 the power plant, but replace them with a new boiler.
3 This boiler would be fired on a combination of coal
4 and biomass. And there's a variety of biomass fuels
5 that could be considered for this, but -- so this
6 allows you to get in -- you know, biomass fuels into
7 your combustion mix.

8 Another option that we looked at was to
9 add about 10 megawatts of photovoltaic rays on local
10 commercial buildings and see how this program costed
11 in. And we used engines and the -- and the biomass.
12 So we've got several kind of all local options here as
13 well as the -- the two with the remote wind and the
14 remote coal to -- to compare.

15 Just to give you an idea of where the
16 energy comes from on these cases, this is the -- the
17 case where you participate in a regional coal unit.
18 And we're looking at roughly 81 percent of the energy
19 from coal and a pretty even split between the market
20 and renewable energies.

21 With the wind replacing the new coal, you
22 can see obviously that we're taking a lot more wind
23 energy and the coal drops back to about 58 percent
24 from your existing resources. And you can see that
25 over on the biomass option, that you're roughly at

1 about a 72 percent level for -- for the solid fuel
2 energy.

3 Give you a feel for how the -- the
4 evaluation is performed. We use what's called net
5 present values, which takes a future stream of annual
6 costs and brings it back to a common year. And so we
7 can then evaluate all of these programs or the
8 optional portfolios into a -- into a common evaluation
9 point.

10 The scale over here (indicating) is in
11 millions of dollars, so these represent billions --
12 1,200,000,000 is the bottom number here. This study
13 is done to -- to 2027, so this is where the MPV is
14 brought back to 2027 to 2008.

15 So when we look at the light blue down
16 here, this is with essentially no carbon tax. And so
17 this is a base level of what would happen if there
18 were no impacts to the cost of CO2 emissions. And as
19 you can see, the -- the rank order of these is
20 essentially the -- the coal portfolio was the lower
21 cost, wind was second and then the biomass and biomass
22 and solar went up in rank.

23 Now, the difference between these net
24 present values is roughly about 6 1/2 percent, which
25 is a fairly small amount. I was talking earlier that

1 for a real solid recommendation on how to move ahead
2 with something, you'd probably be looking more in the
3 neighborhood of about a 10 percent number to st-- draw
4 a strong conclusion from it. So what this means is
5 that you've got a fairly tight grouping of options.

6 Now, when we look at a \$30 a ton CO2 tax,
7 you can see that the impact is to -- to certainly
8 raise the -- the cost of all of the options, but the
9 impact on -- on the wind and the coal units is
10 essentially to bring those into an equivalency point.
11 And, again, the distance between these MPVs drops to
12 about 5 percent, which, again, is well within a --
13 kind of a noise -- economic noise bandwidth.

14 Now, again, these -- these options
15 haven't brought in yet the demand-side management
16 effects of -- of what we're looking at. These are
17 strictly of looking at the existing forecast with the
18 lower cost supply-side options.

19 So moving to the demand-side management
20 discussion, the process that was used here was to
21 develop options. We put -- we had to use options that
22 had a quantifiable amount of energy and demand
23 reduction to kind of set against the equivalent
24 concept of adding a power plant. I mean, we can -- we
25 can quantify and kind of measure how many megawatts

1 we'd add with a power plant and we had to have the
2 same measurement essentially on the demand side.

3 So the programs that we've looked here
4 don't include the kind of soft programs like
5 educational programs and these type of things that CWL
6 would continue to encourage and have available to the
7 customers. And so those are kind of outside the
8 confines of this -- this assessment.

9 After we had the options identified, we
10 had to screen them. And this was to determine how
11 much demand and energy savings we would get by each
12 program, what the -- the cost of -- of the programs
13 would be.

14 And so in the screening, we looked at a
15 benefit/cost comparison. And in the cost of the
16 programs, essentially what we're looking at is the
17 cost of the installation of the device or the amount
18 of rebate that would be applied by CWL to the customer
19 for encouragement of -- of acceptance of that better
20 efficiency or better technology.

21 Once we add the individual options and
22 the individual impacts put together, then we had to
23 look at the -- the variety of DSM options and what
24 that might do as -- in combination and then roll that
25 up into the total portfolio that could be applied to

1 the CWL system.

2 Just to give you an idea here, this --
3 this slide is a sources of energy consumption on CWL's
4 system. And roughly half of the energy is consumed in
5 commercial buildings. About 38 percent is from
6 residential. And the residential's further broken
7 down into these five categories of apartments and
8 duplexes and single-family homes.

9 And so we took the -- the inventory that
10 we discussed with the staff and broke it down by these
11 various components to determine what we felt the
12 reasonable inventory targets would be for each of
13 these categories.

14 Just to give you an idea of how the
15 energy consumption works in natural gas heated homes,
16 this is from the Department of Energy and provides you
17 kind of a scaling factor on where the more attractive
18 ideas are for -- for saving energy in residential
19 consumption.

20 So when we look at this process,
21 essentially what we're taking is this -- the number of
22 end-users, the number of customers on CWL system that
23 have whatever type of thing we're looking at. For
24 instance, you know, the number of refrigerators that's
25 out there on the system that may be in -- be in

1 garages or basements that's kind of a second unit and
2 then multiplying those by the demand and energy
3 benefits that would accrue by either replacing that
4 with a more efficient device or taking it off the
5 system altogether.

6 And so the product of those two numbers
7 gives us then the impact that we would see on the load
8 forecast or the energy and demand requirements that
9 the utility would have to provide. And so by taking
10 the total number of refrigerators times the savings
11 per refrigerator, we can then determine what the total
12 impact would be on the CWL system. And this was done
13 for all of the power supply -- or the demand-side
14 options that we -- we considered.

15 Now, the -- in the denominator of the
16 equation is cost. And so the cost of the program
17 would be the cost of the option, like the cost of a
18 new air conditioner, the cost of recycling that
19 refrigerator, these types of things.

20 And those were compared to the --
21 essentially the avoided cost of what it would take to
22 add that amount of energy and add that amount of
23 kilowatts from the supply options that we looked at
24 earlier.

25 So for this analysis, with the -- the

1 coal portfolio being the lower evaluated portfolio,
2 all of these individual programs were evaluated
3 against that portfolio. And so with that portfolio,
4 we had significant number of -- of residential
5 programs in the HVAC area, the heating ventilation and
6 air conditioning, fixing the thermal envelope by
7 adding more insulation into the walls and attics and
8 that type of thing and more efficient appliances.

9 On the commercial and industrial side, we
10 focused primarily on the existing stock obviously,
11 which it's very difficult, as we'll talk about in a
12 minute, to evaluate the -- the envelope changes and
13 how that might happen in a commercial industrial
14 establishment.

15 So in these programs and these options we
16 were looking more at changing out specific things like
17 the chillers and the -- the appliances and the
18 lighting inside of these establishments.

19 So we looked at roughly 40 options for
20 all of these categories. And essentially the cost --
21 or the cost of the program was approximately a
22 50 percent rebate, which was 50 percent of the
23 installed costs of the device.

24 So when we look at the residential
25 efficiency issues, two of the highest users in the

1 process are heating ventilation and air conditioning
2 or your central air units as well as lighting. Both
3 of those are existing programs that CWL has and both
4 of those are affected by the efficiency standards that
5 the federal government is -- is implementing.

6 And so the -- one of the things that
7 we'll be looking at in this integration phase is how
8 naturally those types of programs are going to come
9 into the system as opposed to how much CWL has to kind
10 of entice people to -- to put those programs in.
11 And -- and we'll talk a little bit about how we can
12 accelerate the acceptance of these type of things.

13 But for the residential side, the more
14 effective programs that came out were thermal envelope
15 enhancements -- is it unplugged? Our story system
16 went -- went out on us. So -- are you going to reboot
17 this?

18 MR. GLASCOCK: It wasn't plugged in so I
19 think the battery went dead.

20 (OFF THE RECORD.)

21 MR. HARRIS: All right. Thank you.

22 Now, the interim report lists all of
23 these programs and all of the analysis that went into
24 these, but essentially some of the higher types of
25 programs that came out were in the residential side

1 looking at the envelope modifications with more
2 insulation, tightening up the duct systems,
3 programable thermostats and these -- retiring of these
4 older second refrigerators came out to be beneficial
5 types of programs.

6 Now, on the commercial and industrial
7 side, as I mentioned, we did look at the modifications
8 of the building envelopes and specifically to the
9 existing resources. This comes about simply because
10 of the variety of the existing commercial stock that
11 you have and the variety of architectural enhancements
12 and accessibility of those enhancements that would
13 have to come about.

14 So it's much more difficult to
15 essentially cost and estimate the -- the issues
16 associated with actually changing significantly the
17 outside envelope of a commercial building as opposed
18 to a residential building, which is fairly easily to
19 add insulation in the attic and these type of things.

20 But what I want to talk about a bit is
21 the -- what we did do was to look at, you know, what
22 would happen if we could kind of make a lot of those
23 changes and enhance the outside envelope. The
24 Department of Energy has essentially two levels of
25 what's called Energy Star commercial building

1 structures. One is an Energy Star 69 and the other is
2 an Energy Star 75 level.

3 Now, what we took was the existing
4 commercial stock, which if you go through the interim
5 report, we broke all these down by various types of
6 commercial structures, restaurants, motels, banks, a
7 bunch of these things. And in the Department of
8 Energy data set, you can look at these different types
9 of -- of structures and look at average consumption
10 and how they compare across this area.

11 And this bottom line right here
12 (indicating) represents essentially the assessment
13 of -- or our assessment on the average commercial
14 building without going into considerations of envelope
15 modifications.

16 To enhance the -- the benefits of -- of
17 doing options, this level up here (indicating) is
18 the -- kind of the lowest level, which you may have
19 heard people talk about the lead program. This is
20 kind of a minimum lead qualit-- qualified building
21 right here.

22 So to get to that level, there would have
23 to be more than just changes inside the existing
24 buildings for heating ventilation and air conditioning
25 and -- and lighting and those type of things.

1 So what -- what the drivers would be to
2 get to that level would be obviously code changes that
3 might come into play, significant rate increases that
4 would make these economics better justifiable for new
5 structures to be put up and then other rewards that
6 you might generate essentially to entice new
7 construction to meet these higher efficiency levels.

8 But this gives you an idea of what, you
9 know, implementing those new codes might do over time
10 to the future construction in the -- in the city.

11 So to give you kind of an idea of what
12 we've identified is that we -- we're estimating that
13 there's roughly about a 33 megawatt amount of demand
14 reduction that could come about and roughly
15 1000 gigawatt hours, which if you went back to the
16 portfolios that we talked about earlier, you know, we
17 were talking about the 34 megawatts of engine steps
18 essentially, which is roughly what you would be
19 looking at an equivalent for for this type of savings.

20 So -- now, the other -- other thing that
21 we're dealing with here is the rate that you all would
22 accept new efficiency appliances, new programs that
23 might come about and, you know, how you would move
24 ahead essentially to change to a higher efficiency air
25 conditioner or better light bulbs or those type of

1 things.

2 And so there's a rate of acceptance in
3 all of these -- these options that we've been looking
4 at. And essentially people accept things based on how
5 the level of -- of rebate and, you know,
6 attractiveness that it is to pay for the replacement
7 technology. And in the acceptance of these devices,
8 essentially this was taken out of the statewide study.
9 These acceptance rates are down to .2 to 10 percent
10 range.

11 To -- to kind of give you an idea of how
12 this looks on a -- on a impact of the -- the DSM
13 programs, this bottom line here (indicating)
14 represents the impacts out of the residential side.
15 This purple is from the commercial side. And this
16 yellow provides you a total line. And this is taking
17 in all those varieties of acceptance levels that we
18 had.

19 And you can see that, you know, we're
20 talking about acceptance over a period of years here
21 to -- to bring out the efficiencies in these -- in
22 these programs.

23 To get us to a point where we're, you
24 know, essentially getting the same amount of benefit
25 but getting it faster, we essentially would have to

1 induce the public to accept these programs at a
2 quicker rate. And so that's something that we're
3 going to be discussing with the task force is how that
4 assumption would be looked at from the standpoint of
5 how rapidly we might improve the -- the acceptance of
6 some of these different options.

7 To look at the cost of the options, we're
8 roughly looking at total installed cost of about
9 \$60 million for all of these -- these different
10 options that we've looked at. And one approach would
11 be that we'd look at these and evaluate them in the
12 context that CWL would pay half of that in a rebate to
13 the customers for these various programs.

14 If you drop the -- the value of the cost,
15 you know, the -- the benefit cost ratio is -- if you
16 reduce the -- the denominator, then you increase the
17 benefit cost of these programs. And there may more of
18 these if we drop the price down, but then you affect
19 the acceptance rate. So there's a tradeoff in there
20 that we need to be discussing with -- with the task
21 force.

22 So to give you an idea of how this
23 impacts the forecast, this is the -- the yellow line
24 that -- that was taken off of the earlier chart and
25 the purple represents the adjustments for the DSM

1 benefits. And this again roughly is -- accrues to
2 about a 33 megawatt benefit over the study period.

3 So what we've done here is we've -- we've
4 looked at everything in isolation from each other.
5 We've looked at the supply side and kind of looked at
6 the DSM options, and now what we're going to do is
7 we're going to take the better options out of both of
8 those sides and -- and combine them into an integrated
9 plan.

10 And so what we're going to be doing is to
11 look at the -- the potential impact on the forecast
12 based on the DSM programs. And then we're going to be
13 looking at how these portfolios that looked good on
14 the supply side individually are affected by successes
15 on the -- on the demand side.

16 And so what that will then result in is a
17 recommended plan for both the supply-side and
18 demand-side options to be incorporated into the City's
19 future considerations. And so that's kind of the
20 final step that we're into and then we'll come back
21 and -- and provide you the wrap-up on -- on those
22 recommendations.

23 But some issues to think about in the
24 context of looking at these -- the supply-side
25 options, you know, the more aggressive you can get on

1 demand side management considerations and the faster
2 you can get the efficiencies running out of the
3 system, then the more you can delay supply-side
4 options.

5 And so there's several things that we'll
6 need to be talking to the task force about to -- you
7 know, to -- to move forward into the integration phase
8 and what those assumptions might -- might look like.

9 One of the benefits that you have is that
10 you've got a lot of in-town supply options that can be
11 considered. And the difficulty with participating in
12 a -- in an outside resource, you know, be it a coal
13 plant or potential nuclear plant or whatever, is that
14 you really aren't in the driver's seat by when you
15 need to make an investment, what your minimum amount
16 of megawatts may be that you could acquire and these
17 types of things.

18 So with these in-town options available
19 to you, you can -- you can slide the in-service date
20 to whenever you think -- think may be necessary. You
21 know, if you're very successful on DSM issues, you
22 know, you can slide an -- slide the in-service date
23 beyond what we might recommend.

24 So that gives you quite a bit of
25 flexibility from the standpoint of the power supply

1 portfolio, as well as, you know, the -- the in-town
2 options minimize your transmission losses and costs,
3 the local jobs and that type of thing.

4 In considering this coal participation
5 option, first of all, there has to be an option to
6 participate in. There are currently several plants
7 being considered in the Midwest. I'm sure that you
8 all are aware of the challenges that the state of
9 Kansas has gone through in getting a plant permitted
10 up there so these units are under pretty good
11 challenge right now.

12 And the -- the ability to proceed with
13 that option may have a fairly low probability of -- of
14 being a true option for you and we'll have to consider
15 that in the context of the -- the next phase.

16 Renewable options, there's some
17 interesting things going on there. There's
18 concentrating photovoltaic units that are right now
19 talking about price points that are very competitive
20 with current options and they're not quite commercial
21 yet though is the problem with that.

22 And the industry is talking right now a
23 year to 18 months before that's going to happen,
24 but -- so you'll have to kind of wait and see how
25 that -- that works. But with this in-town option

1 considered, you know, you've got some time to -- to
2 look at those commercial availability issues and kind
3 of wait for that next new technology that comes out.

4 Another issue that's out there is that
5 Missouri is considering a referendum on the November
6 ballot about an RPS. Now, if that passes, it may
7 impact, you know, your-all's RPS or whether one or
8 another will take precedence is a question that we
9 need to be considering.

10 There's a lot of wind being developed in
11 the region. Recently the -- the big issue associated
12 with wind is the transmission to -- to deliver it to
13 the customers. There's been announcements of
14 utilities getting behind some major transmission
15 upgrades that would essentially put a fairly
16 good-sized wind energy pipeline pretty much right
17 through the Columbia area.

18 And so you could potentially utilize that
19 to -- to deliver some fairly significant amounts of
20 wind to the city, but that's a time off yet and it's
21 really difficult to -- to bring the -- the actual
22 quantification of that issue in, but it certainly
23 gives you some optionality in the future.

24 So some of the next steps that we're
25 into, certainly one of the issues that we're dealing

1 with in the industry today is massive cost escalations
2 of both fuel and the capital cost for facilities. So
3 we're going to update the -- the assumptions that are
4 in the study right now to the more recent costs for
5 these issues.

6 We're also going to be looking at the
7 level of carbon tax that's going to be used. Right
8 now we're looking at about \$30 as being a potential
9 number. And then the -- the amount of DSM rebate that
10 CWL would pay for the implementation of the various
11 options. When you have the \$30 a ton CO2 tax, the
12 portfolio options include resources like the coal
13 participation, like engines and these types of things.

14 So essentially what you've seen tonight
15 we'll be kind of moving forward with unless we get
16 different direction from the -- from the task force.

17 And then as I mentioned, this integration
18 phase then will determine the final levels of -- and
19 final options of -- of programs that we would
20 recommend to the DSM to be implemented, how those
21 might be affected by the federal standards that are
22 going to be implemented anyway and looking at those
23 things.

24 And then on the supply side, we'll be
25 providing the technology types, which essentially is

1 the -- the fuel, like wind or -- or coal or combustion
2 turbines, these type of things, as well as the amount
3 of megawatts that need to be installed and what year
4 they need to be installed.

5 And so that will provide essentially a
6 road map for the development for the utility to move
7 down to determine, you know, how to implement these
8 programs and what types of supply-side options really
9 make most economic sense for the utility.

10 So with that, we're -- turn it back over
11 to you, John, for questions.

12 CHAIR CONWAY: All right. Thank you,
13 Kiah.

14 Next, we'll move to the public comment in
15 the form of questions written on the index cards. We
16 would ask you to move the index cards to the inside
17 aisle and we'll pick those up. If you don't have an
18 index card, feel free to come forward and get one from
19 the table.

20 We will start with the first questions
21 and as you complete your index card, feel free to pass
22 it to the inside of the aisle and then we'll pick
23 those up and should address those starting out.

24 Kiah, what is the forecasted load growth
25 rate before DSM is considered?

1 MR. HARRIS: I'm not sure what the
2 percentage is, but we could go back to the -- to the
3 graph here and -- and roughly over the study period,
4 you're looking at increases of roughly 130 megawatts.

5 CHAIR CONWAY: Since CWL service
6 territory is limited by boundaries with Boone Electric
7 and possibly Ameren, does our growth become limited
8 when we reach our utility geographical limits?

9 MR. HARRIS: That may be a question for
10 Jim; Jim Windsor.

11 MR. WINDSOR: Given our current service
12 territory, we don't believe that there's still a
13 significant amount of open space for growth. There's
14 also been -- we're seeing significant infill and
15 re-development. So -- and -- and there's still lots
16 of new technology. So we believe that for the
17 foreseeable future, certainly this period, that growth
18 will -- will still be there.

19 CHAIR CONWAY: What percent will electric
20 prices have to increase to cover even the lowest-cost
21 IRP option?

22 MR. HARRIS: We haven't really translated
23 these costs into -- into rates. Essentially the
24 evaluation is being done on the lowest-cost option and
25 the -- the report essentially or whatever future that

1 the City takes will then be converted into rates, but
2 we haven't really developed rates under this study.

3 CHAIR CONWAY: Kiah, what if there is an
4 emissions credit program rather than the carbon tax?

5 MR. HARRIS: The impact on the emissions
6 credit program, if we take the example of the SO2
7 emissions credit structure, what happened in that
8 program was that there was an initial amount of
9 credits essentially provided to utilities to kind of
10 allow them to operate existing fleets and then
11 procure, as time went on, additional needs from the
12 market.

13 So if we were looking at a trade-type
14 system here with credits, essentially -- as I say, if
15 the SO2 program is an example, the utilities with
16 carbon emissions would be provided a certain amount
17 of -- of credits that could be used to offset the
18 generation of a portion of their new CO2 emissions.

19 So it would tend to mitigate the -- the
20 cost impact a bit, I think, of the -- of the cap and
21 trade program if the credits were provided.

22 CHAIR CONWAY: How can we access the
23 large student population and have them help us
24 conserve in the form of lights, air conditioning and
25 et cetera?

1 MR. HARRIS: Well, to the degree that
2 these are students that are living on the CWL service
3 territory, I think the encouragement of, you know, the
4 landlords to put in more efficient appliances and --
5 and change out their light bulbs to CFL to these type
6 of things would be beneficial.

7 We've given an indication of how much
8 energy is consumed in the apartment area and that will
9 be a -- an identification of the refocusing of those
10 dollars to help reduce that energy.

11 CHAIR CONWAY: Does our expanded need for
12 energy require we look at the demand-side management
13 conservation by public that is required?

14 MR. HARRIS: I'm sorry, John. Could you
15 repeat that?

16 CHAIR CONWAY: Does our expanded need for
17 energy require we look at the demand-side management,
18 in parenthesis, conservation by public that is
19 required of -- I think that the question is should
20 there be governmental requirements to the further
21 conservation?

22 MR. HARRIS: Well, I -- well, certainly
23 we're looking at the benefits of conservation and
24 efficiency and demand-side management measures.
25 Certainly it's a public policy issue whether or not

1 that becomes mandatory or voluntary. So we're not in
2 public policy arena, but that would certainly be a
3 decision that -- that could be entertained by --
4 certainly by the City.

5 CHAIR CONWAY: Wouldn't it make more of
6 an impact to make existing buildings more efficient
7 than to impose standards on new buildings due to
8 their -- I have a very difficult making that out.

9 Okay. Wouldn't it be make more of an
10 impact to make existing buildings more efficient than
11 to impose standards on new buildings due to their
12 greater numbers?

13 MR. HARRIS: The -- there's no doubt that
14 if you could have a building envelope program for the
15 commercial buildings, that there would be some
16 benefits out of it.

17 The difficulty, as I mentioned earlier,
18 is quantifying the cost and the acceptance from the
19 commercial building owners as to whether or not there
20 was sufficient incentive to go to the expense involved
21 in -- in doing those fixes.

22 CHAIR CONWAY: What attention has been
23 given to subsidizing home and commercial outfitting
24 for energy generation onsite?

25 MR. HARRIS: I think the question falls

1 down to residential and commercial distributed
2 generation. We haven't looked at a residential level
3 of gen-- distributed generation. Typically those
4 are -- are more emergency-related issues and -- but we
5 have looked at commercial distributed generation from
6 what's called a combined heat and power application.

7 And so we feel that there may be
8 potential options inside the city to accept
9 distributed generation on a combined heat and power
10 process and that is being looked at.

11 CHAIR CONWAY: This question is directed
12 to co-generation. Is this plan flexible enough to
13 attract and retain quality employers? Co-generation
14 could be very attractive to some companies.

15 MR. HARRIS: Yes. As I mentioned,
16 we're -- combined heat and power is, in essence, a
17 co-generation application for commercial
18 establishments. On an industrial basis, the
19 co-generation is a -- a very industrial-specific
20 issue. Certainly we feel that as the energy costs
21 increase, the value of -- of co-generation would be of
22 benefit.

23 Certainly one of the opportunities that
24 the City has with the municipal-owned utility is to
25 try to make those programs work; whereas, it's not

1 always that easy to make them work in an
2 investor-owned utility type -- type environment.

3 CHAIR CONWAY: What is the proposed fuel
4 biomass gener-- generator?

5 MR. HARRIS: The -- the biomass fuel that
6 we studied in -- in this approach utilized the
7 tire-derived fuel that was identified in the study
8 that was performed by CWL earlier.

9 We've talked with the City staff and we
10 know that there's interest in certain biomass in the
11 region from -- from the agricultural community and
12 that certainly could be considered in the design of
13 the facility to incorporate that type of biomass as
14 well into the combustion process.

15 CHAIR CONWAY: Let's see. Kiah, this may
16 be a repeat question, but how would your analysis
17 differ if cap and trade is adopted rather than a
18 carbon tax?

19 MR. HARRIS: The difficulty with the cap
20 and trade is -- is essentially coming up with what
21 the -- the economic value of -- of the credits is
22 going to be. We've taken the -- the tax approach more
23 from the standpoint of being able to more easily
24 quantify an impact.

25 Until we get some definition on the

1 legislation, the variability and the cap and trade
2 approaches that are being talked about, it's -- it's
3 really difficult to quantify. So I'll have to admit
4 that what we have right here is more of a proxy holder
5 than anything, but until we get some definition on
6 that issue, it's hard to -- to guess.

7 CHAIR CONWAY: When will the analysis of
8 current Water & Light DSM programs be presented to the
9 public? This analysis was included in the scope of
10 work to be completed by the consultant.

11 MR. HARRIS: All of this process will be
12 wrapped up in approximately a month from kind of
13 agreement with the task force as to some of these
14 assumptions that we need to revisit.

15 CHAIR CONWAY: Okay. The DSM programs in
16 the March 2008 interim report did not include programs
17 to increase the efficiency of building shells or HVAC
18 systems for residential rental housing. Columbia has
19 a lot of rental units that are not very efficient.
20 When will the analysis of rental housing DSM programs
21 be completed?

22 MR. HARRIS: The -- there was assessment
23 of apartments and -- and duplexes in the -- in the
24 analysis. So I would have to kind of understand
25 better that question, but there was consideration

1 given to rental units in Columbia.

2 CHAIR CONWAY: The city charter mandates
3 that we have reliable electric services, yet no new
4 generation built locally in 30 years. Shouldn't we be
5 able to cover our peak city load, 302 megawatts, and
6 not worry about electric grid blackouts?

7 MR. HARRIS: That is really a -- a
8 consideration that -- that would be a -- kind of a
9 driver assumption in the study. It would be fairly
10 costly to locate all of the generation internally that
11 you would need to meet all of your load requirements
12 for a potential grid interruption.

13 Due to the -- the type of grid that you
14 have and the -- the connection points that you have to
15 it, you know, a transmission -- total transmission
16 blackout would have to be across a very widespread
17 area prior to -- you know, to a complete blackout here
18 at the city. But the cost of that would be -- be a
19 significant number.

20 CHAIR CONWAY: With respect to the
21 psychological component of the acceptance of energy
22 efficient technology, how do we pursue this issue?

23 MR. HARRIS: I'm not sure how to answer
24 that one. I -- I don't know how to respond to that
25 one.

1 CHAIR CONWAY: Which options would have
2 the greatest impact in reducing greenhouse gas
3 reduction in Columbia?

4 MR. HARRIS: From an efficiency
5 standpoint on the supply side, you know, what we --
6 what we were looking at was the -- the building
7 envelopes and the replacement of the refrigerators and
8 these type of things for residential applications and
9 the commercial lighting and other appliance change-out
10 and HVAC systems in the commercial buildings.

11 On the supply side, the lower -- lowest
12 option would certainly be the wind and the
13 photovoltaics to produce the least carbon emissions.
14 Gas would be next and then the -- the coal, solid fuel
15 would be the -- the highest.

16 CHAIR CONWAY: Also, the task force has
17 received a written narrative from Gary Miller, 1312
18 West Broadway. It's really not in the form of a
19 question. We will enter it into the record.

20 Okay. Any additional questions on the
21 cards?

22 If not, we will move to public comment.
23 If there are those that would like to come to the
24 podium and -- and make public comment, you're welcome.
25 We ask that you state your name and your address and

1 you'll be limited to three minutes.

2 MR. MURRAY: My name is Oren Murray (ph.)
3 and I'm a mechanical engineer with Project Solutions
4 Engineering Company here in Columbia. And I've got
5 30 years experience in solar and combined heat and
6 power, at least two of the things that we're talking
7 about tonight.

8 And I'm very pleased that -- that we are
9 addressing both of these. And I suspect that I know
10 which application Kiah is talking about on this
11 5 megawatt CHP plant. We're doing a 4 1/2 megawatt
12 plant in Houston, Texas right now.

13 And it makes a lot of sense with the
14 right engine mix and the right utility, you know,
15 right mix. You do have to have a need for heat and I
16 think we have several opportunities here in Columbia
17 for that. And I think you have a solid plan there,
18 Kiah. Thank you.

19 CHAIR CONWAY: Thank you.

20 Are there others for public comment?

21 MR. SKALA: My name is Karl Skala,
22 5201 Gasconade Drive. I guess I was -- my question
23 was the one that you couldn't answer. Had to do with
24 the psychological component of whether or not people
25 are accepting of this notion of paying a little bit

1 more for energy given the circumstances that we find
2 ourselves in, that is the -- the prospect of being
3 behind cheaper coal and coal-fired power plants and
4 some of the new technologies that are coming in line
5 and so on.

6 Do you think the City plays a role in --
7 in explaining this to the folks if they're going to
8 pay a surplus on their utility bill?

9 MR. HARRIS: Well, I think certainly
10 the -- there's been surveys that have shown that
11 people are willing to pay, you know, certain amount
12 above kind of their average cost for renewable energy.
13 And these numbers have typically been in the 5 to
14 10 percent area.

15 If the city's going to maybe accept a
16 future that would cost more than that, which, as I
17 understand it, is not really in accordance with the
18 RPS guidelines, certainly the -- an educational
19 process would be, you know, important to -- to gain as
20 much acceptance of that as possible, yes.

21 MR. SKALA: Thank you.

22 CHAIR CONWAY: Thank you.

23 MR. KIND: Good evening. My name's Ryan
24 Kind and I live at 105 East Ridgely in Columbia. Just
25 a couple of comments. I think I had some questions

1 maybe to Kiah that you had some difficulty answering
2 as well and I wanted to revisit them.

3 One of the questions had to do with the
4 evaluation of existing Water & Light programs. And
5 you responded by saying that the analysis of
6 everything would be wrapped up in a month, but it
7 wasn't clear to me that that analysis of existing
8 programs would be part of the analysis that we wrapped
9 up in the next month.

10 MR. HARRIS: Well, if you'll look at the
11 interim report, there are numerous programs that have
12 been looked at, options that have looked at that are
13 current programs here in Columbia.

14 As I mentioned earlier, the programs that
15 we're analyzing are the ones that have measurable,
16 quantifiable results that we can talk about. We're
17 not going to evaluate the success of the
18 educational-type programs and -- and the more
19 soft-type programs.

20 One of the programs that wasn't included
21 in the assessment that will be looked at in the
22 wrap-up is load control. And we have to understand a
23 little bit more about the -- the current program and
24 how it -- it might impact issues.

25 One thing that goes on with the load

1 control program as we go through this is that the
2 control program's primarily oriented towards air
3 conditioners. And the -- the industry is moving to
4 essentially dual-compressor air conditioners for the
5 Sear 16 and above levels.

6 And it's not clear from my mind how the
7 load control of the dual-compressor air conditioning
8 system is going to work in the context of the existing
9 fleet. And so one of the things that I'm sure we'll
10 be recommending is that there's a pilot program that
11 CWL undertakes to really look at the impacts of load
12 control on dual-compressor systems versus the single
13 system.

14 MR. KIND: Okay. Well, that's certainly
15 helpful. I was curious I guess about some other
16 programs in terms of just the programs the City has
17 for rebates on residential air conditioning units, the
18 programs that the City has for loaning residential
19 customers money to do insulation in their homes and
20 things like that. And I think those have quantifiable
21 impacts as well.

22 MR. HARRIS: We evaluated residential
23 insulation addictions, we evaluated the HVAC
24 change-out at residential structures going from a
25 Sear 13 to Sear 16, so those have been evaluated.

1 MR. KIND: Okay. Well, that's a little
2 different than what I was expecting.

3 Anyway, the other question was -- that I
4 was curious about was -- it had to do with residential
5 rental housing. And your response to that was that
6 you think it's been evaluated, but the question I
7 asked was specifically getting at not the evaluation
8 of appliances in rental housing, but the evaluation of
9 building shell measures and enhancements to HVAC
10 systems, which it's my understanding that that had not
11 been evaluated as part of the interim report.

12 MR. HARRIS: There are multi-family
13 evaluations that have been made in the interim report
14 for building envelopes, for duplexes and quad-plexes I
15 know. And -- as well as the HVAC change-outs for
16 those central air type units.

17 MR. KIND: Okay. Well, hopefully I'll be
18 able to find that at --

19 MR. HARRIS: If you need help finding it,
20 let me know.

21 MR. KIND: I'll probably be in touch with
22 you, Kiah. I appreciate it.

23 CHAIR CONWAY: Are there others for
24 public comment?

25 MS. WELCH: This is mostly comment

1 directed to the Power Supply Task Force and City. I
2 am Monta Welch --

3 CHAIR CONWAY: Excuse me. Excuse me.
4 Okay. Go ahead.

5 MS. WELCH: -- founder and president of
6 Columbia Climate Change Coalition speaking on behalf
7 of many individuals and organizations that we
8 collaborate and work with. I would like to thank you
9 for your volunteer time for Columbia's energy future.
10 And would like to thank the City staff and the
11 concerned citizens that are here today also.

12 And the following response is to what I
13 did look at online as well as the presentation
14 tonight. I will hand this also in so everyone can
15 have a copy.

16 But Columbia does derive most of its
17 funding from the pilot. And as a result of providing
18 utility and trash services to its customers, citizens
19 want the services provided by the City and appreciate
20 the quality this method affords.

21 We can continue with this model as
22 Columbia powers its future or we can look at
23 modifications and consider factors likely to present
24 themselves, such as the present economic situation
25 largely related to the unfolding energy crisis with

1 resulting instabilities, including economic pressure
2 in all business sectors, homeland security, dependence
3 on peak fuels, some supplied by foreign governments
4 and others, many unstable -- many of those are
5 unstable, migration, immigration, global food storages
6 and disruptive changes in the global economy, among
7 others.

8 It's important to note that Missouri's

9 State Emergency Management Agency reports 13
10 weather-related Presidential-declared disasters in
11 Missouri in a little more than two years. Only two of
12 them cleaned up by the end of January of 2007 with CNN
13 now saying that weather may be the greatest threat to
14 homeland security. These kind of factors greatly
15 affect Columbians and how they get their energy and
16 its -- also its hidden invisible costs.

17 There should be some discussion about
18 decentralization as we talk about Columbia's energy
19 future, both within what the City provides as well as
20 what individuals can do on their own.

21 We should be considering a primary focus
22 on conservation beginning with every day individual
23 habits, moving from there to steps of retrofitting
24 existing structures.

25 And the City should promptly begin a

1 citywide conservation campaign utilizing organizations
2 including civic, environmental, business and
3 professional, schools and churches to get us all on
4 the right foot to -- and reduce the demand.

5 Should be additional programs also to
6 develop -- developed to assist further than what we
7 already have to assist low-income individuals with
8 more expensive retrofitting projects in the form of
9 grants and/or low-interest loans or other creative
10 financing mechanisms such as Berkeley, California is
11 utilizing. Some of these programs would be
12 appropriate for any income levels.

13 There should be programs to install
14 renewable energy options that would require
15 retrofitting as a prerequisite, be -- and tailored to
16 assist different income levels and cover residential
17 buildings as well as commercial.

18 These programs should consider the
19 alternative proposal to Solar One, which has been
20 previously submitted to the City Council and is
21 attached to this presentation of letter.

22 So any regulations should be redesigned
23 to accommodate conservation, efficiency and renewal
24 efforts. The issues of aesthetics, density and sprawl,
25 land use, mass transit and green space all play a role

1 in energy use.

2 Since Columbia's expecting growth, these
3 issues must be resolved as soon as possible with a
4 full understanding of the impact on Columbia's energy
5 requirements. Columbia's building regulations should
6 be strengthened to reflect the wisdom of that zero
7 building design. These highly efficient building can
8 be built to easily pay for the small additional costs
9 of constructing a building that will save untold
10 amounts of energy.

11 Columbia should become as sustainable and
12 self-sufficient as possible with some decentralization
13 and programs that will keep more of its energy dollars
14 in the pockets of the community and its citizens.

15 CHAIR CONWAY: Just pass it around and
16 make it a part of the public record. Thank you.

17 MR. O'CONNOR: John O'Connor, civil
18 engineer. And I thank you for your presentation,
19 Kiah. I thought it was quite useful.

20 Might add that I've been consultant and a
21 specialty consultant to Burns and McDonnell on issues
22 related to drinking water over the years, done some
23 extraordinary studies, we think.

24 But as I looked at your graph there, it
25 occurred to me -- you probably have looked into this,

1 what the effect on the existing demand would be of an
2 increase in the -- the cost of -- of -- of our
3 utilities, our power, if it went up, say, by 25 or
4 50 percent. How elastic is that demand?

5 MR. HARRIS: To a degree, the forecast
6 incorporates some of those economic parameters, it's
7 my understanding the way the City develops the
8 forecast. Certainly the -- the pressure on
9 consumption is going to be somewhat elastic with
10 the -- with the price.

11 The history of elasticity with energy so
12 far has shown that it's pretty steep elasticity. And
13 so it -- it kind of remains to be seen what -- what
14 the future is going to hold, but historically it's
15 been pretty difficult to see with the -- the increases
16 that we've had in the past, significant long-lasting
17 changes in energy consumption patterns. And I think
18 whether you're driving a car or using electricity, I
19 mean, it's pretty much the same type of thing.

20 MR. O'CONNOR: You don't think that with
21 the current economic climate, which is even affecting
22 our -- the sale of gasoline, that it might have a
23 similar or an expanded effect on even energy use if
24 households had to spend, say, 25 percent more on their
25 electric bill?

1 MR. HARRIS: Well, I -- I'm not sure what
2 percentage we're talking about as far as this type of
3 a program is concerned.

4 MR. O'CONNOR: I just picked a number.

5 MR. HARRIS: I mean, there is definitely
6 a number out there that would be causing some -- some
7 reduction in consumption, but I'm not sure that I know
8 what that number is.

9 MR. O'CONNOR: Thank you.

10 MR. WHITE: Hi, folks. I'm Bruce White,
11 1403 Brumming (ph.) Court. I just briefly wanted to
12 say I really support the idea of distributed
13 generation, especially if there's emergency management
14 capabilities hand in hand with that and -- and perhaps
15 the idea of using our -- our trash with regard to the
16 biomass generation as well. That would be great way
17 to handle both of those.

18 I wanted to ask though if anybody on the
19 task force or -- or you, Kiah, could tell me what --
20 this must be a misprint. The cost of the renewable
21 energy mandated in the ordinance must not be more than
22 3 percent of the cost of electricity derived from
23 non-renewable sources? Does that mean not be more
24 than 3 percent more than the cost of electricity
25 already derived from non-renewable sources?

1 MR. ROPER: Yeah.

2 MR. WHITE: Is that what that means?

3 Thanks, folks.

4 CHAIR CONWAY: Are there others?

5 If not, we'll conclude that portion of

6 the public meeting. We thank you for your input.

7 The task force will be moving forward to

8 have additional meetings to consider the public input

9 in the -- before the final version of the IRP is -- is

10 completed. Once it's completed, it will be presented

11 to the City Council.

12 If you would want to review again the

13 interim version of the IRP as well as the power point

14 presentation that was given this evening, that's

15 available at the City's website, www.GoColumbia.com.

16 Also, if you want to make additional

17 written comments, we'd ask you, through an e-mail

18 process, to go to WLMail@GoColumbiaMo.com or Post

19 Office Box 6015 [sic], Columbia, Missouri 65205.

20 With that, we'll conclude the public

21 hearing. Thank you.

22 (HEARING CONCLUDED.)

23

24

25

sworn

employed

CERTIFICATE OF REPORTER

I, Tracy L. Thorpe Taylor, a Certified Shorthand Reporter,
within the State of Missouri, do hereby certify that the witness
whose testimony appears in the foregoing deposition was duly
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by any of the parties to the action in which this deposition was
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Tracy L. Thorpe Taylor, CCR

